TEST REPORT

Reference No.	:	WTX24D11274664W001
Manufacturer*	:	Lumi United Technology Co., Ltd
Address	:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, Guangdong 518000, China
Factory	:	Lumi United Technology Co., Ltd
Address	:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, Guangdong 518000, China
Product	:	Hub M100
Model(s)	:	HM-G02E, HM-G02D
Brand Name	:	Aqara
Standards	:	EN 55032:2015+A1:2020 EN 55035:2017+A11:2020
Date of Receipt sample	:	2024-11-27
Date of Test	:	2024-12-04 to 2024-12-19
Date of Issue	:	2024-12-26
Test Result	:	**Pass**

Remarks:
1. The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.
2. "*" **manufacturer** means any natural or legal person who manufactures radio equipment or has radio equipment designed or manufactured, and markets that equipment under his name or trade mark.

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Compiled by:

Estel Qian/ Project Engineer

Approved by:

Deval Qin / Designated Reviewer

1 Contents

2 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTX24D11274664W001	2024-11-27	2024-12-04 to 2024-12-19	2024-12-26	Original	-	Valid

3 General Information

3.1 General Description of E.U.T.

Product ..... : Hub M100

Model(s)..... : HM-G02E, HM-G02D

Model Description..... : Only the model number and sale channels are different.

Remark..... : The model HM-G02E was tested in this report.

3.2 Details of E.U.T.

Ratings ..... : Input: 5V⎓0.5A

3.3 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab:N/A

Lab address:N/A

Test items: N/A

3.4 Abnormalities from Standard Conditions

None.

4 Test Summary

EMISSION (EN 55032)		
Test Item	**Test Standard**	**Result**
Conducted Emissions from the AC mains power ports 150KHz to 30MHz	EN 55032	Pass
Asymmetric Mode Conducted Emissions 150KHz to 30MHz	EN 55032	Pass
Conducted Differential Voltage Emissions 30MHz to 2150MHz	EN 55032	N/A
Radiated Emissions, 30MHz to 1000MHz	EN 55032	Pass
Radiated Emissions, Above 1GHz	EN 55032	Pass
IMMUNITY (EN 55035)		
Test Item	**Test Method**	**Result**
Electrostatic Discharge (ESD)	IEC 61000-4-2	Pass
Radiation Immunity	IEC 61000-4-3	Pass
Electrical Fast Transients (EFT)	IEC 61000-4-4	Pass
Surges	IEC 61000-4-5	Pass
Injected Currents	IEC 61000-4-6	Pass
Power-frequency magnetic fields	IEC 61000-4-8	N/A*
Voltage Dips and Voltage interruptions	IEC 61000-4-11	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object
*	Applicable only to equipment containing devices intrinsically susceptible to magnetic fields, such as CRT monitors, Hall effect elements, electro-dynamic microphones, magnetic field sensors or audio frequency transformers.

5 Equipment Used during Test

5.1 Equipment List

Conducted emissions from the AC mains power ports						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMI Test Receiver	R&S	ESCI	100947	2024-07-18	2025-07-17
2	LISN	R&S	ENV216	100115	2024-07-18	2025-07-17
3	Cable	Top	TYPE16(3.5M)	-	2024-07-18	2025-07-17
3m Semi-anechoic Chamber for Radiation (TDK)						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	2024-04-22	2025-04-21
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2024-11-04	2025-11-03
3	Amplifier	ANRITSU	MH648A	M43381	2024-04-22	2025-04-21
4	Cable	HUBER+SUHNER	CBL2	525178	2024-04-22	2025-04-21
3m Fully Anechoic Room for Radiation (Above 1GHz)						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	2024-04-22	2025-04-21
2	Broad-bandHorn Antenna	SCHWARZBECK	BBHA 9120 D	667	2024-01-23	2025-01-22
3	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2024-07-18	2025-07-17
4	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2024-04-22	2025-04-21
Electrostatic Discharge						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Electrostatic Discharge Simulator	SCHLODER	SESD 216	606144	2024-04-24	2025-04-23

Radio-frequency electromagnetic fields						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Signal Generator	R&S	SMB100A	105942	2024-07-18	2025-07-17
2	RF Power Amplifier	BONN Elektronik	BLWA0830-160/100/40D	128740	2024-07-18	2025-07-17
3	GestockteBreitband (S tacked) Log.-per.Antenna	SCHWARZBECK	STLP9128D	043	2024-07-18	2025-07-17
4	Amplifier	NJNT	NTWPAS-2560025	2560025	2024-07-18	2025-07-17
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2024-01-23	2025-01-22
Surge, EFT, Voltage dips and Interruption						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	All Modules Generator	SCHAFFNER	6150	34579	2024-07-18	2025-07-17
2	Capacitive Coupling Clamp	SCHAFFNER	CDN 8014	25311	2024-07-18	2025-07-17
3	Signal and Data Line Coupling Network	SCHAFFNER	CDN 117	25627	2024-07-18	2025-07-17
4	AC Power Supply	HENGYUAN	DTDGC-4	-	2024-07-18	2025-07-17
Conducted Immunity						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	RF Generator	TESEQ	NSG4070	25781	2024-07-18	2025-07-17
2	CDN M-Type	TESEQ	CDN M016	25112	2024-01-16	2025-01-15
3	EM-Clamp	TESEQ	KEMZ 801	25453	2024-07-18	2025-07-17
4	Attenuator 6dB	TESEQ	ATN6050	25376	2024-07-18	2025-07-17

Test Software:

Test Item	Software name	Software version
Conduction disturbance Radiated Emission(3m)	EZ-EMC	EZ-EMC(RA-03A1-1)
Electrical Fast Transients Surges Voltage Dips and Voltage interruptions	Schaffner System	Modula 2.7
Radiation Immunity	BL	BL410-E V19.614
Injected Currents	BL	BL410-E V19.614

5.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

5.3 Measurement Uncertainty

Parameter	Uncertainty (Note 1)
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emission (150kHz-30MHz)	±3.64dB
Radiated Emission_3m (30MHz-1000MHz)	±4.53 dB
Radiated Emission_10m (30MHz-1000MHz)	±5.24 dB
Radiated Emission(1GHz~18GHz)	±5.03dB

Note 1: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5.4 Test Mode

Test Item	Test Mode	Test Voltage
EN 55032		
Conducted emissions from the AC mains power ports (150KHz-30MHz)	Normal working	AC 230V/50Hz
Radiated Emissions (30MHz-1GHz)	Normal working	AC 230V/50Hz
Radiated Emissions (1GHz-6GHz)	Normal working	AC 230V/50Hz
EN 55035		
Electrostatic Discharge(ESD) ☒Air Discharge: ±2,4,8kV ☒Contact Discharge: ±2,4kV ☒HCP & VCP: ±2,4kV Performance Criterion B	Normal working	AC 230V/50Hz
Radio-frequency electromagnetic fields (RS) 3V/m,80% AM(1kHz), 80MHz to 1GHz 1.8GHz, 2.6GHz, 3.5GHz, 5GHz Performance Criterion A	Normal working	AC 230V/50Hz
Electrical Fast Transients from the AC mains power ports (EFT) 1KV Performance Criterion B	Normal working	AC 230V/50Hz
Surges from the AC mains power ports 1.2/50 us Open Circuit Voltage, 8/20 us Short Circuit Current, 5 positive at 90°, 270° 5 negative at 90°, 270° line to line 0.5, 1 kV, line to earth 0.5, 1, 2kV Performance Criterion B	Normal working	AC 230V/50Hz
Injected Currents from the AC mains power ports (CS) 0.15MHz to 10MHz for 3V r.m.s. 10MHz to 30MHz for 3 to 1Vr.m.s. 30MHz to 80MHz for 1V r.m.s. Performance Criterion A	Normal working	AC 230V/50Hz
Voltage Dips Less 5% 0.5P Performance Criterion B 70% 25P for 50Hz 30P for 60Hz Performance Criterion C Voltage Interruptions less5% 250P for 50Hz 300p for 60Hz Performance Criterion C	Normal working	AC 230V/50Hz

6 Emission Test Results

6.1 Conducted emissions from the AC mains power ports

Test Requirement..... : EN 55032

Test Method..... : EN 55032

Frequency Range..... : 150kHz to 30MHz

Class/Severity..... : Class B/Table A.10 of EN 55032

Test Result ..... : ☑ Pass ☐ Fail ☐ not applicable (Remark)

6.1.1E.U.T. Operation

Operating Environment:

Temperature..... : 26.1°C

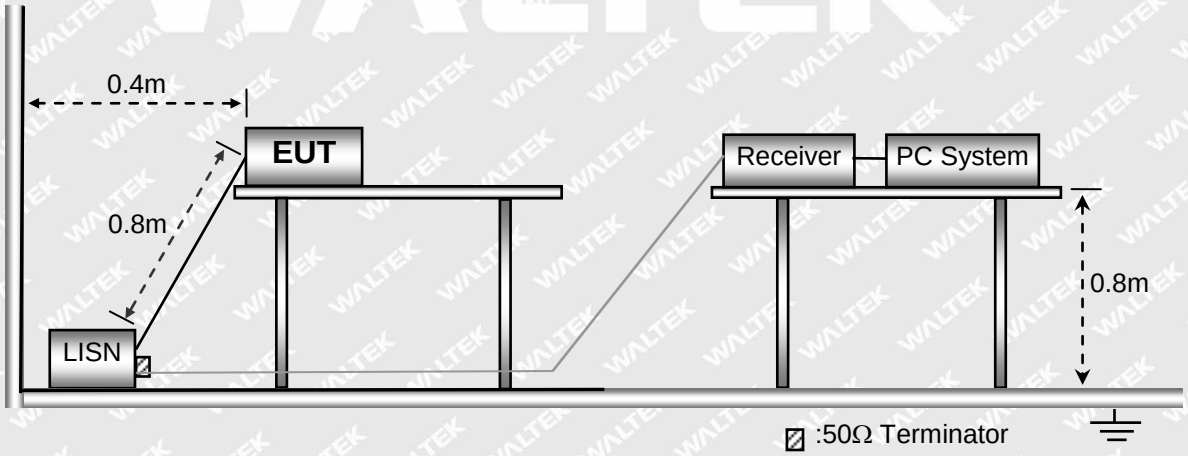
Humidity..... : 50.5%RH

Atmospheric Pressure..... : 101.3kPa

EUT Operation..... : Refer to section 5.4.

6.1.2Block Diagram of Test Setup

The Conducted emissions from the AC mains power ports tests were performed in accordance with the EN 55032.

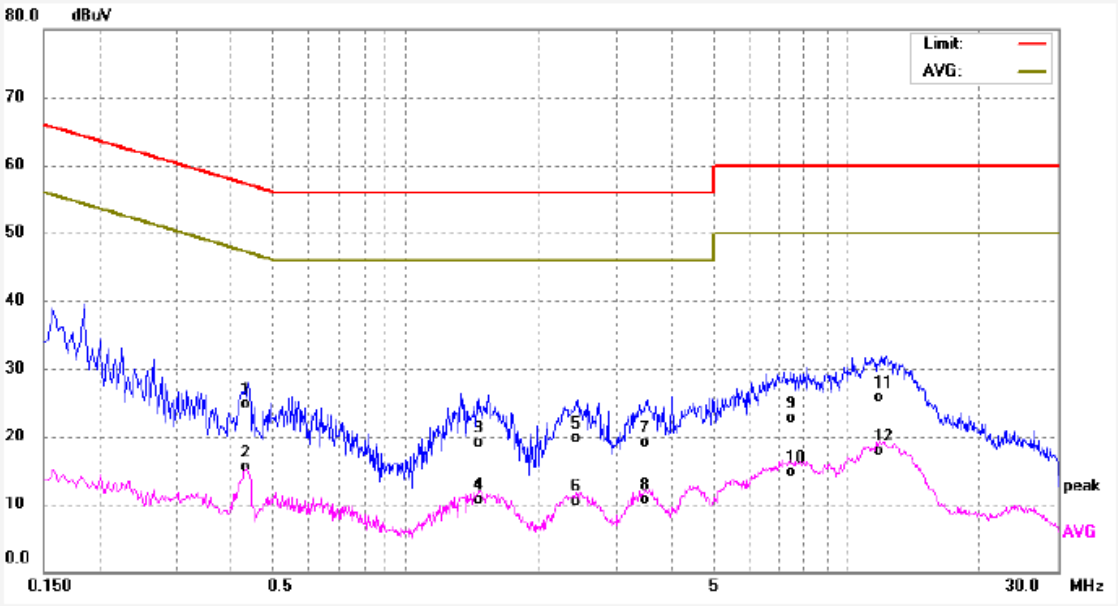


6.1.3Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

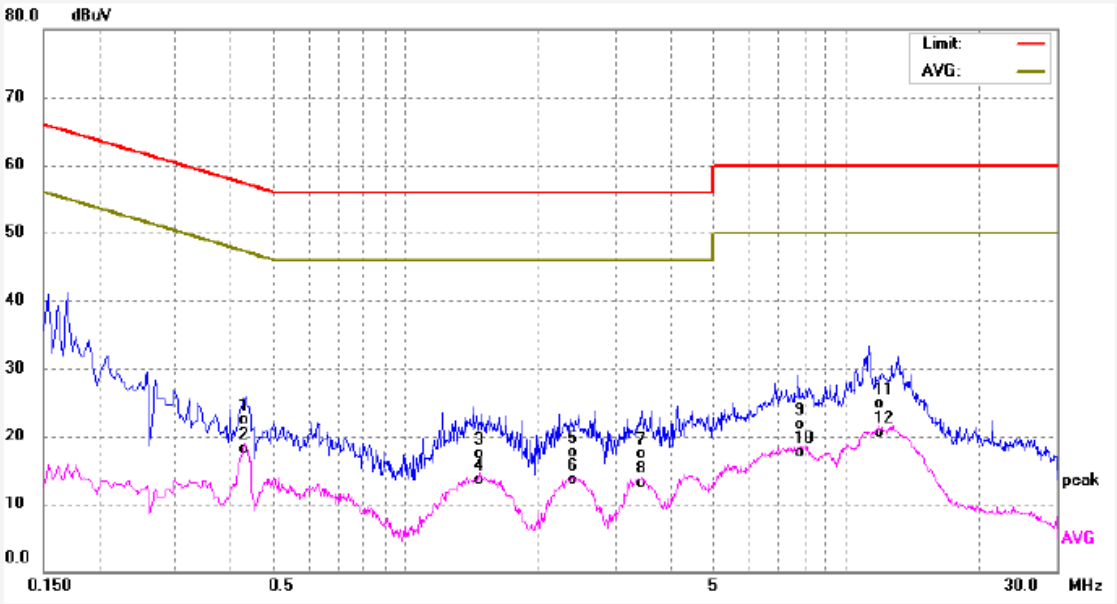
6.1.4Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4340	15.10	9.59	24.69	57.18	-32.49	QP	
2	0.4340	5.99	9.59	15.58	47.18	-31.60	AVG	
3	1.4620	9.44	9.62	19.06	56.00	-36.94	QP	
4	1.4620	0.99	9.62	10.61	46.00	-35.39	AVG	
5	2.4180	10.00	9.66	19.66	56.00	-36.34	QP	
6	2.4180	0.75	9.66	10.41	46.00	-35.59	AVG	
7	3.4540	9.48	9.71	19.19	56.00	-36.81	QP	
8	3.4540	0.91	9.71	10.62	46.00	-35.38	AVG	
9	7.4700	12.67	9.95	22.62	60.00	-37.38	QP	
10	7.4700	4.69	9.95	14.64	50.00	-35.36	AVG	
11	11.7660	15.68	10.05	25.73	60.00	-34.27	QP	
12	11.7660	7.81	10.05	17.86	50.00	-32.14	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4300	12.67	9.60	22.27	57.25	-34.98	QP	
2	0.4300	8.53	9.60	18.13	47.25	-29.12	AVG	
3	1.4660	7.58	9.63	17.21	56.00	-38.79	QP	
4	1.4660	3.80	9.63	13.43	46.00	-32.57	AVG	
5	2.4020	7.87	9.67	17.54	56.00	-38.46	QP	
6	2.4020	3.75	9.67	13.42	46.00	-32.58	AVG	
7	3.4220	7.49	9.72	17.21	56.00	-38.79	QP	
8	3.4220	3.29	9.72	13.01	46.00	-32.99	AVG	
9	7.8660	11.69	9.96	21.65	60.00	-38.35	QP	
10	7.8660	7.58	9.96	17.54	50.00	-32.46	AVG	
11	11.8860	14.63	10.08	24.71	60.00	-35.29	QP	
12	11.8860	10.52	10.08	20.60	50.00	-29.40	AVG	

6.2 Radiated Emissions, 30-1000MHz

Test Requirement	:	EN 55032
Test Method	:	EN 55032
Frequency Range	:	30MHz to 1000MHz
Class/Severity	:	Class B/ Table A.4 of EN 55032
Test Result	:	☑ Pass ☐ Fail ☐ not applicable (Remark)

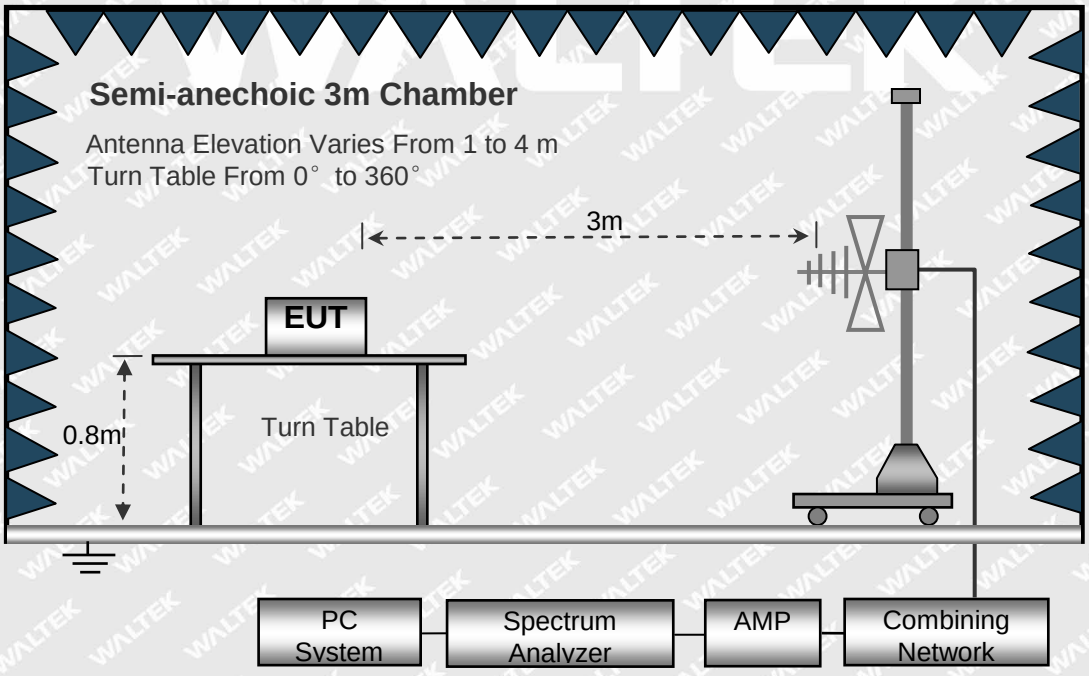
6.2.1E.U.T. Operation

Operating Environment:

Temperature	:	24.7°C
Humidity	:	46.5%RH
Atmospheric Pressure	:	101.5kPa
EUT Operation	:	Refer to section 5.4.

6.2.2Block Diagram of Test Setup

The Radiation Emissiontest was performed in accordance with EN 55032.



6.2.3Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

6.2.4Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

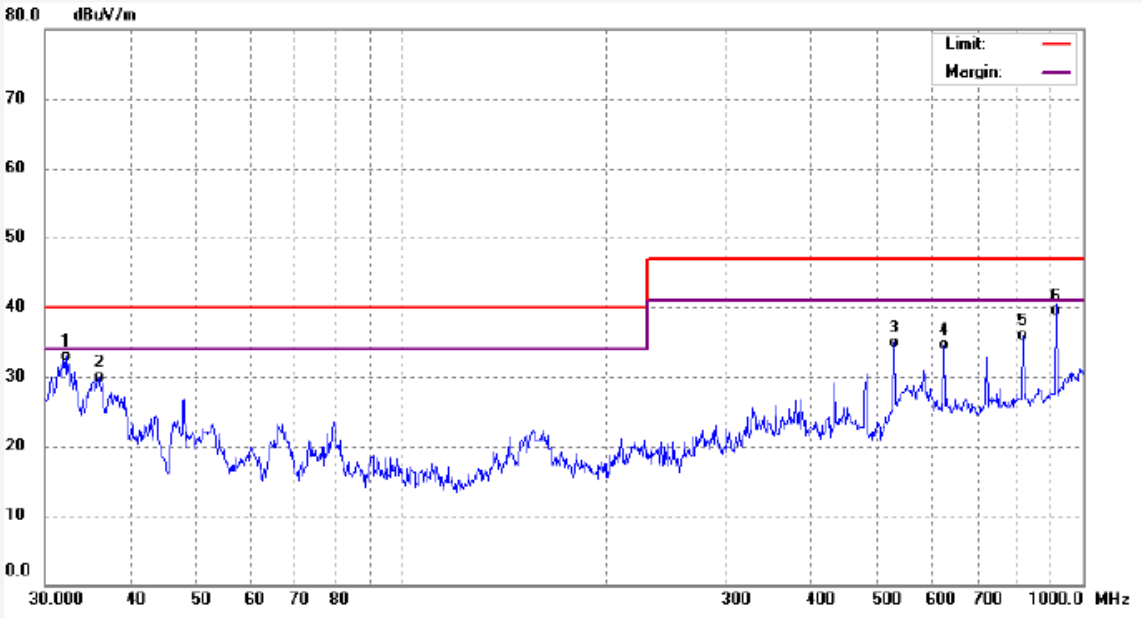
Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. –Limit

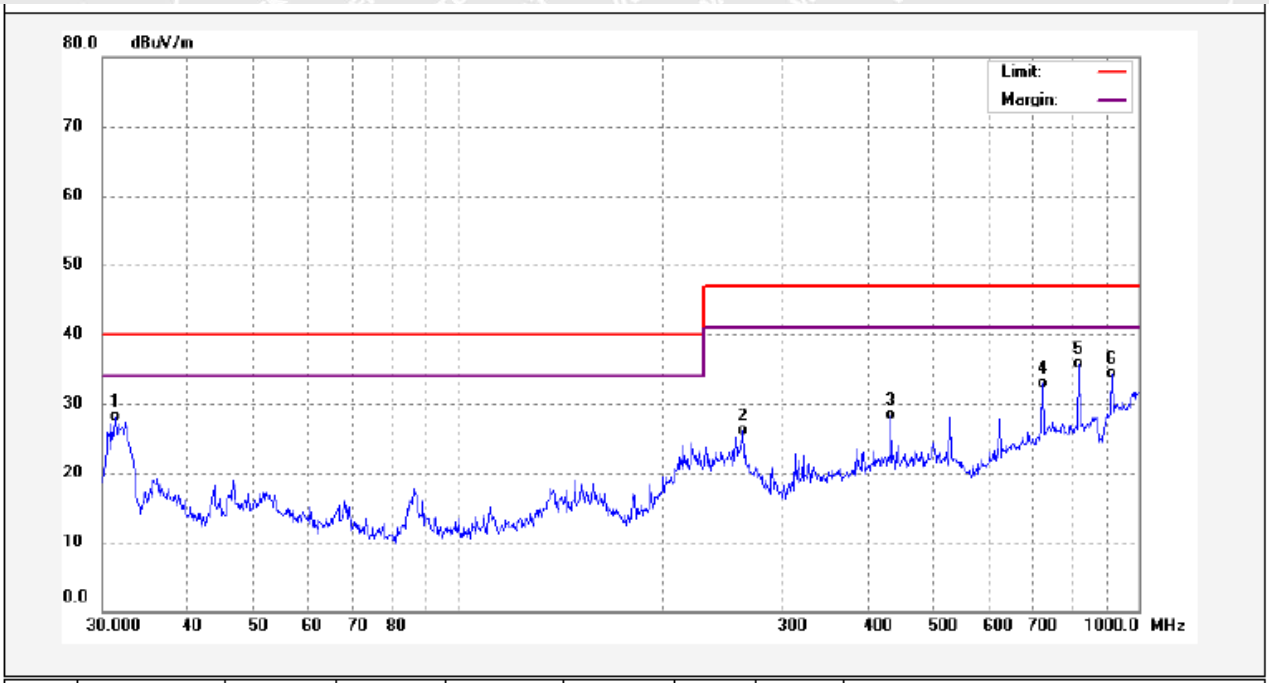
6.2.5Test Data

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.2925	49.62	-16.77	32.85	40.00	-7.15	QP	
2	36.0007	46.45	-16.50	29.95	40.00	-10.05	QP	
3	528.2458	44.36	-9.39	34.97	47.00	-12.03	QP	
4	625.0780	41.21	-6.74	34.47	47.00	-12.53	QP	
5	815.9678	38.62	-2.80	35.82	47.00	-11.18	QP	
6	912.8620	41.96	-2.36	39.60	47.00	-7.40	QP	

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	31.2892	44.90	-16.75	28.15	40.00	-11.85	QP	
2	261.9751	35.89	-9.83	26.06	47.00	-20.94	QP	
3	432.5455	39.27	-11.00	28.27	47.00	-18.73	QP	
4	721.7258	37.10	-4.29	32.81	47.00	-14.19	QP	
5	815.9678	38.55	-2.80	35.75	47.00	-11.25	QP	
6	912.8619	35.19	-0.97	34.22	47.00	-12.78	QP	

6.3 Radiation Emission, Above 1000MHz

Test Requirement..... : EN 55032

Test Method..... : EN 55032

Frequency Range..... : Above 1000MHz

Class/Severity..... : Class B/ Table A.5 of EN 55032

Test Result ..... : ☑ Pass ☐ Fail ☐ not applicable (Remark)

6.3.1E.U.T. Operation

Operating Environment:

Temperature..... : 24.4°C

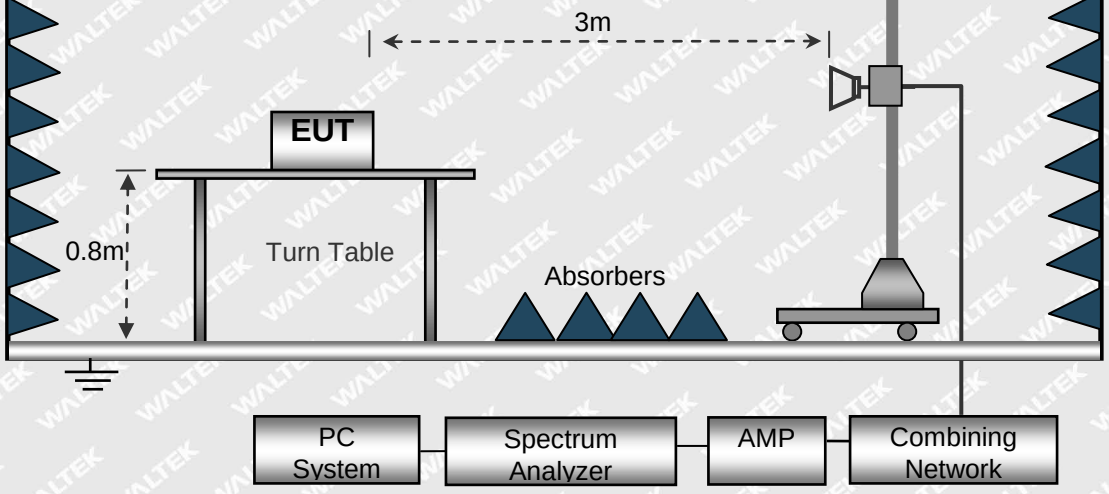
Humidity..... : 52.8%RH

Atmospheric Pressure..... : 101.3kPa

EUT Operation..... : Refer to section 5.4.

6.3.2Block Diagram of Test Setup

The RadiationEmissiontest was performed in accordance with EN 55032.



6.3.3Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Average measurements were performed if peak emissions were within 6dB of the average limit line.

The test Frequency range judgment basis:

If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz.

If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.

If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.

If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

6.3.4Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

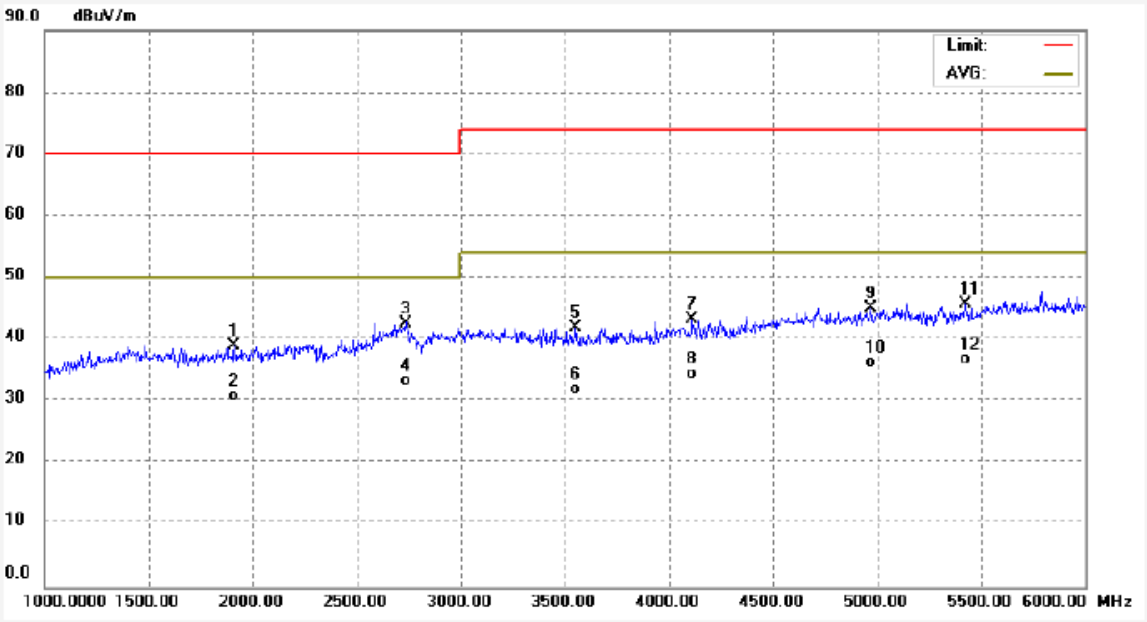
Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. –Limit

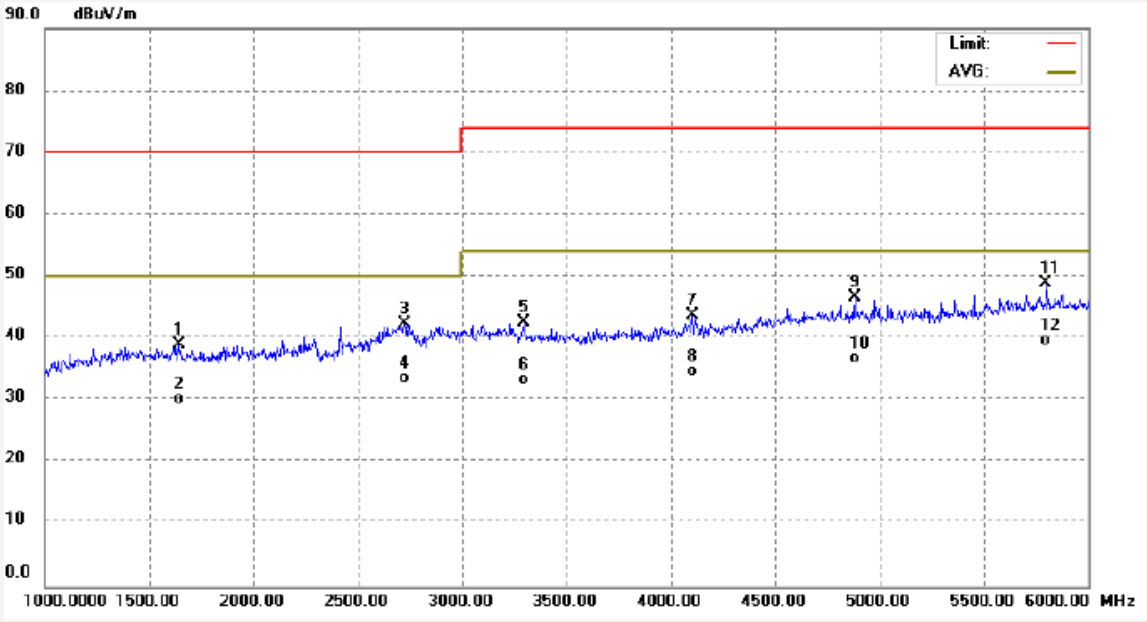
6.3.5Test Data

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1910.000	49.29	-10.19	39.10	70.00	-30.90	peak	
2	1910.000	41.04	-10.19	30.85	50.00	-19.15	AVG	
3	2735.000	51.01	-8.26	42.75	70.00	-27.25	peak	
4	2735.000	41.78	-8.26	33.52	50.00	-16.48	AVG	
5	3550.000	50.05	-8.18	41.87	74.00	-32.13	peak	
6	3550.000	40.26	-8.18	32.08	54.00	-21.92	AVG	
7	4110.000	50.10	-6.88	43.22	74.00	-30.78	peak	
8	4110.000	41.41	-6.88	34.53	54.00	-19.47	AVG	
9	4965.000	50.36	-5.23	45.13	74.00	-28.87	peak	
10	4965.000	41.47	-5.23	36.24	54.00	-17.76	AVG	
11	5420.000	49.99	-4.30	45.69	74.00	-28.31	peak	
12	5420.000	41.03	-4.30	36.73	54.00	-17.27	AVG	

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1640.000	50.66	-11.57	39.09	70.00	-30.91	peak	
2	1640.000	41.82	-11.57	30.25	50.00	-19.75	AVG	
3	2720.000	50.63	-8.25	42.38	70.00	-27.62	peak	
4	2720.000	41.79	-8.25	33.54	50.00	-16.46	AVG	
5	3295.000	51.08	-8.33	42.75	74.00	-31.25	peak	
6	3295.000	41.79	-8.33	33.46	54.00	-20.54	AVG	
7	4100.000	50.61	-6.90	43.71	74.00	-30.29	peak	
8	4100.000	41.57	-6.90	34.67	54.00	-19.33	AVG	
9	4880.000	52.02	-5.37	46.65	74.00	-27.35	peak	
10	4880.000	42.20	-5.37	36.83	54.00	-17.17	AVG	
11	5795.000	52.62	-3.64	48.98	74.00	-25.02	peak	
12	5795.000	43.31	-3.64	39.67	54.00	-14.33	AVG	

7 Immunity Test Results

7.1 Performance Criteria

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (orpermissible loss of performance) specified by the manufacturer, when the apparatus is used asintended. If the minimum performance level or the permissible performance loss is notspecified by the manufacturer, then either of these may be derived from the product descriptionand documentation, and from what the user may reasonably expect from the apparatus if usedas intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (orpermissible loss of performance) specified by the manufacturer, when the apparatus is used asintended. During the test, degradation of performance is allowed, however, no change of actualoperating state or stored data is allowed. If the minimum performance level or the permissibleperformance loss is not specified by the manufacturer, then either of these may be derived fromthe product description and documentation, and from what the user may reasonably expectfrom the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function isself-recoverable or can be restored by the operation of the controls, or by any operationspecified in the instructions for use. For further details, please refer to EN 55035.

7.2 Electrostatic Discharge (ESD)

Test Requirement	:	EN 55035
Test Method	:	IEC 61000-4-2
Test Result	:	Pass
Discharge Impedance	:	330Ω / 150pF
Discharge Voltage	:	Air Discharge: ±8kV Contact Discharge: ±4kV HCP &VCP: ±4kV
Polarity	:	Positive & Negative
Number of Discharge	:	Minimum 10 times at each test point
Discharge Mode	:	Single Discharge
Discharge Period	:	1 second minimum

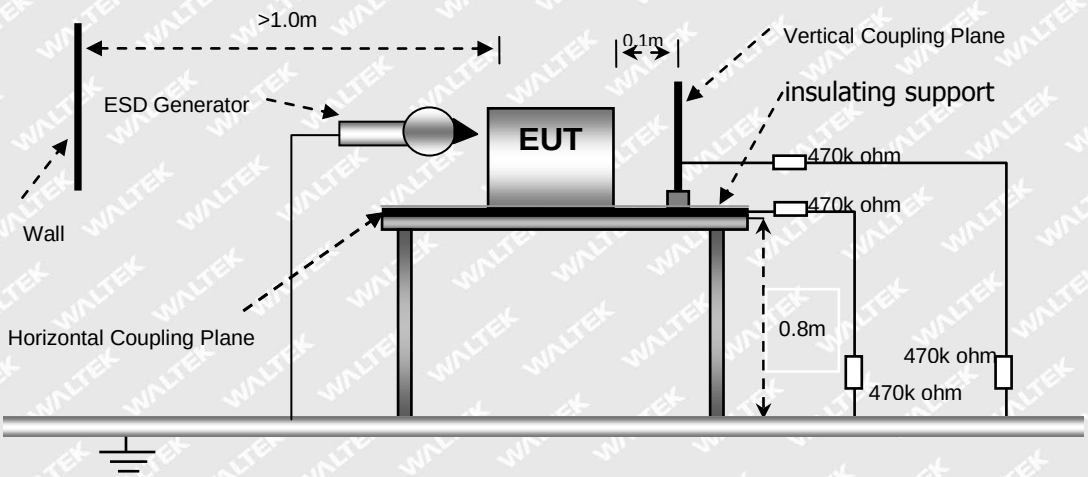
7.2.1 E.U.T. Operation

Operating Environment:

Temperature	:	24.2°C
Humidity	:	47.2%RH
Barometric Pressure	:	102.4kPa
EUT Operation	:	Refer to section 5.4.

7.2.2 Block Diagram of Setup

The ESD test was performed in accordance with the IEC 61000-4-2.



7.2.3 Direct Discharge Test Results

Observations: **Test points:** **1. All Exposed Surface & Seams;**
2. All metallic part

Direct Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Contact Discharge	Air Discharge
±8	B	1	N/A	Pass
±4	B	2	Pass	N/A

7.2.4 Indirect Discharge Test Results

Observations: **Test points:** **1. All sides.**

Indirect Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Horizontal Coupling	Vertical Coupling
±4	B	1	Pass	Pass

7.3 Radio-frequency electromagnetic fields

Test Requirement	:	EN 55035
Test Method	:	IEC 61000-4-3
Test Result	:	Pass
Frequency Range	:	80MHz to 1GHz 1.8GHz, 2.6GHz, 3.5GHz, 5GHz
Test level	:	3V/m
Modulation	:	80%, 1kHz Amplitude Modulation.
Face of EUT	:	Front, Back, Left, Right
Antenna polarisation	:	Horizontal&Vertical

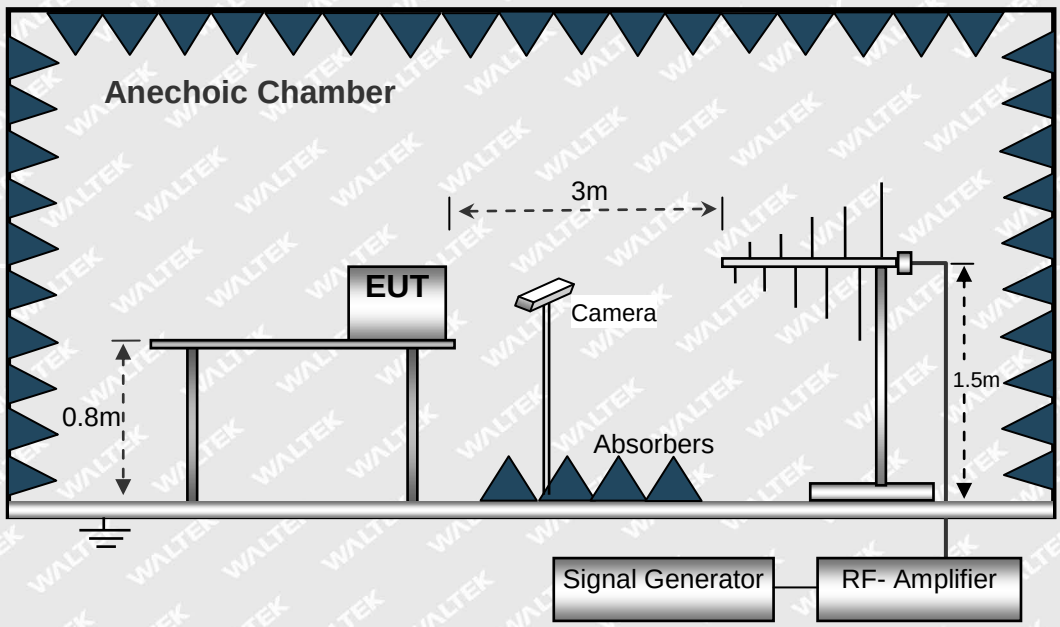
7.3.1 E.U.T. Operation

Operating Environment:

Temperature	:	24.6°C
Humidity	:	46.1% RH
Barometric Pressure	:	102.0kPa
EUT Operation	:	Refer to section 5.4.

7.3.2 Block Diagram of Setup

The Radio-frequency electromagnetic fields Immunity test was performed in accordance with the IEC 61000-4-3.



7.3.3 Test Results

Test Frequency (MHz)	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
80-1000MHz 1800MHz, 2600MHz, 3500MHz, 5000MHz	Front, Back, Left, Right	Horizontal	3V/m	1%	1s	A	Pass
	Front, Back, Left, Right	Vertical	3V/m	1%	1s	A	Pass

7.4 Electrical Fast Transients (EFT)

Test Requirement	:	EN 55035
Test Method	:	IEC 61000-4-4
Test Result	:	Pass
Polarity	:	Positive & Negative
Repetition Frequency	:	100 kHz : only for single lines of xDSL equipment 5 kHz : other
Burst Duration	:	300ms
Test Duration	:	2 minutes per level & polarity

7.4.1 E.U.T. Operation

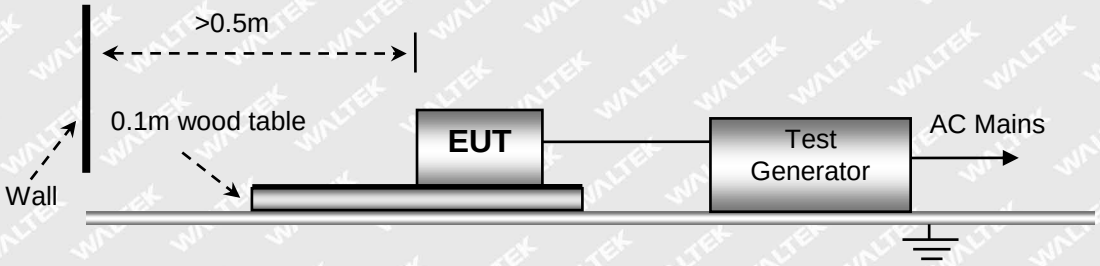
Operating Environment:

Temperature	:	24.2°C
Humidity	:	47.2%RH
Barometric Pressure	:	102.4kPa
EUT Operation	:	Refer to section 5.4.

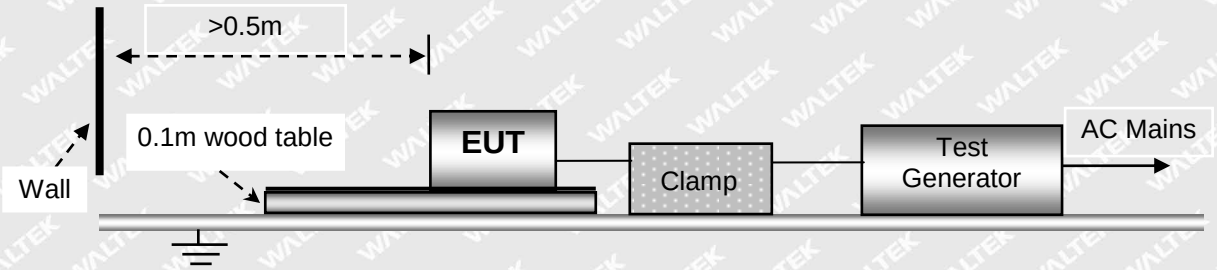
7.4.2 Block Diagram ofTest Setup

The Electrical Fast Transients Immunity test was performed in accordance with the IEC 61000-4-4.

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



7.4.3 Test Results

Test Port	Test Level(kV)	Performance Criterion	Result
AC Mains	±1.0	B	PASS
Analogue/Digital	±0.5	B	N/A [a]
DC Network	±0.5	B	N/A [a]

Remark:

a Applicable only to cables which according to the manufacturer's specification supports communication on cable lengths greater than 3 m.

7.5 Surges

Test Requirement	:	EN 55035
Test Method	:	IEC 61000-4-5
Test Result	:	Pass
Wave-Shape	:	Combination Wave 1.2/50 us Open Circuit Voltage 8/20 us Short Circuit Current
Generator Source Impedance	:	2 ohm between networks 12 ohm between network and ground
Interval	:	60s between each surge
No. of surges	:	Five positive pulses line-to-neutral at 90°phase Five negative pulses line-to-neutral at 270°phase Five positive pulses line-to-earth at 90°phase Five negative pulses line-to-earth at 270°phase Five negative pulses neutral-to-earth at 90°phase Five positive pulses neutral-to-earth at 270°phase

7.5.1 E.U.T. Operation

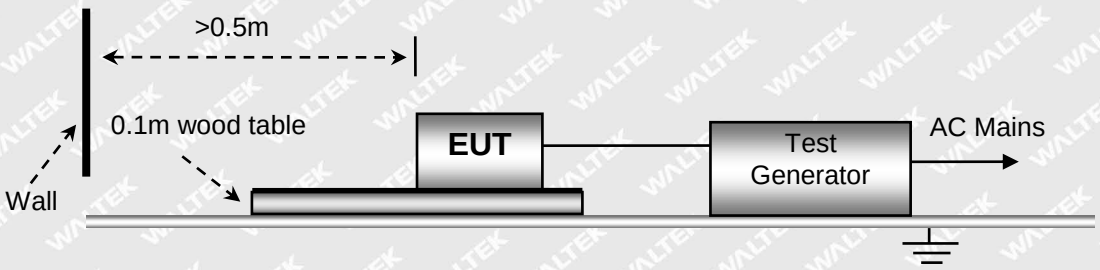
Operating Environment:

Temperature	:	24.2°C
Humidity	:	47.2%RH
Barometric Pressure	:	102.4kPa
EUT Operation	:	Refer to section 5.4.

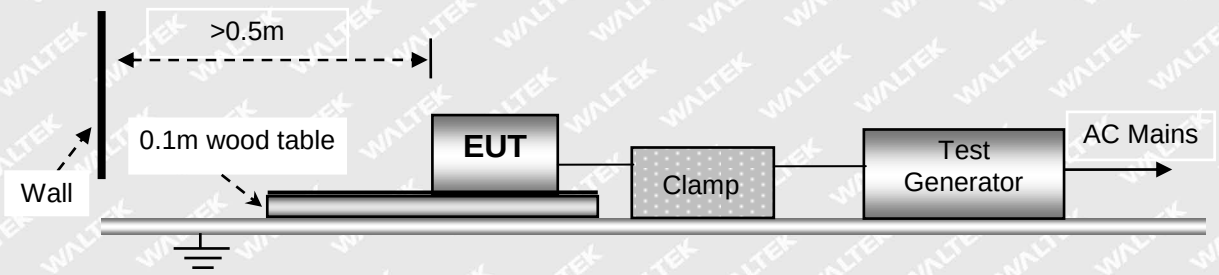
7.5.2 Block Diagram ofTest Setup

The Surges Immunity test was performed in accordance with the IEC 61000-4-5.

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



7.5.3 Test Results

Test Port	Applied Voltage (kV)	Performance criterion	Result
AC Mains (Between Live And Neutral)	±1	B	PASS
AC Mains (Between Live And Earth)	±2	B	N/A
AC Mains (Between Neutral And Earth)	±2	B	N/A
Analogue/Digital	±1 and 4	C	N/A [abcf]
	±1.0	C	N/A [abdf]
	±0.5	B	N/A [aef]
DC Network	±0.5	B	N/A [af]

Remark:

a Applicable only to ports which according to the manufacturer's specification may connect directly to outdoor cables.

b Port type: unshielded symmetrical, Apply: lines to ground.

c Apply where primary protection is intended

d Apply where primary protection is not intended

e Port type: coaxial or shielded, Apply: shield to ground

f Applicable only to cables which according to the manufacturer's specification supports communication on cable lengths greater than 3 m.

7.6 Injected Currents Immunity

Test Requirement	:	EN 55035
Test Method	:	IEC 61000-4-6
Test Result	:	Pass
Frequency Range	:	0.15MHz to 80MHz
Test level	:	0.15MHz to 10MHz for 3V r.m.s. 10MHz to 30MHz for 3 to 1Vr.m.s. 30MHz to 80MHz for 1V r.m.s. (unmodulated emf into 150 Ω)
Modulation	:	80%, 1kHz Amplitude Modulation.

7.6.1 E.U.T. Operation

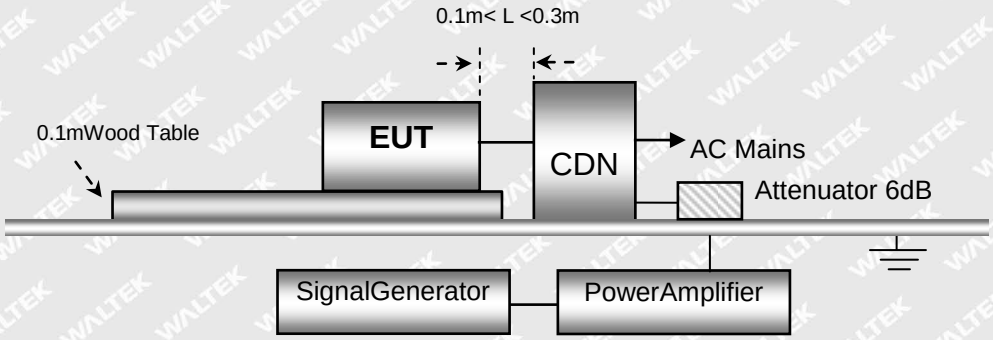
Operating Environment:

Temperature	:	24.2°C
Humidity	:	42.4% RH
Barometric Pressure	:	102.2kPa
EUT Operation	:	Refer to section 5.4.

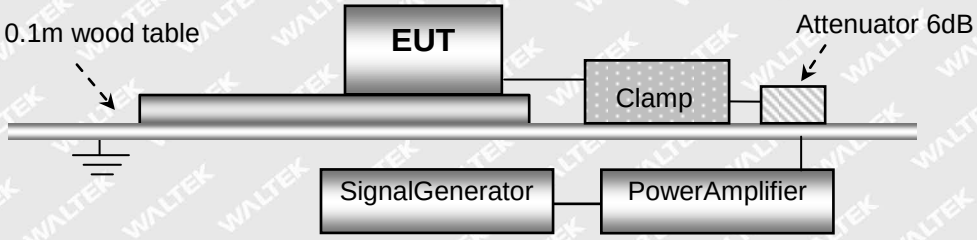
7.6.2 Block Diagram of Test Setup

The Injected Currents Immunity test was performed in accordance with the IEC 61000-4-6.

For AC Mains or DC Input:



For Signal or Telecommunication Ports:



7.6.3 Test Results

Frequency Range	Line	Test Level	Modulation	Step Size	Dwell Time	Performance Criterion	Result
0.15MHz to 10MHz	AC mains	3Vr.m.s.	80%, 1kHz Amp. Mod.	1%	1s	A	PASS
10MHz to 30MHz		3 to 1Vr.m.s.					PASS
30MHz to 80MHz		1Vr.m.s.					PASS
0.15MHz to 10MHz	Analogue/ Digital	3Vr.m.s.	80%, 1kHz Amp. Mod.	1%	1s	A	N/A [a]
10MHz to 30MHz		3 to 1Vr.m.s.					N/A [a]
30MHz to 80MHz		1Vr.m.s.					N/A [a]
0.15MHz to 10MHz	DC Network	3Vr.m.s.	80%, 1kHz Amp. Mod.	1%	1s	A	N/A [a]
10MHz to 30MHz		3 to 1Vr.m.s.					N/A [a]
30MHz to 80MHz		1Vr.m.s.					N/A [a]

7.7 Voltage Dips and Interruptions

Test Requirement..... : EN 55035

Test Method..... : IEC 61000-4-11

Test Result ..... : Pass

Frequency Range ..... : 0% &70% &0 %of U_T (Supply Voltage)

No. of Dips / Interruptions : 1 per Level at 20ms intervals

7.7.1 E.U.T. Operation

Operating Environment:

Temperature..... : 24.2°C

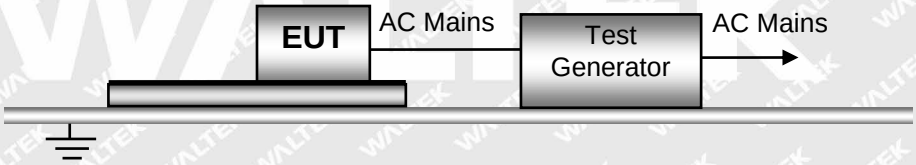
Humidity..... : 47.2%RH

Barometric Pressure..... : 102.4kPa

EUT Operation..... : Refer to section 5.4.

7.7.2 Block Diagram of Setup

The Voltage Dips and Interruptions Immunity test was performed in accordance with the IEC 61000-4-11.

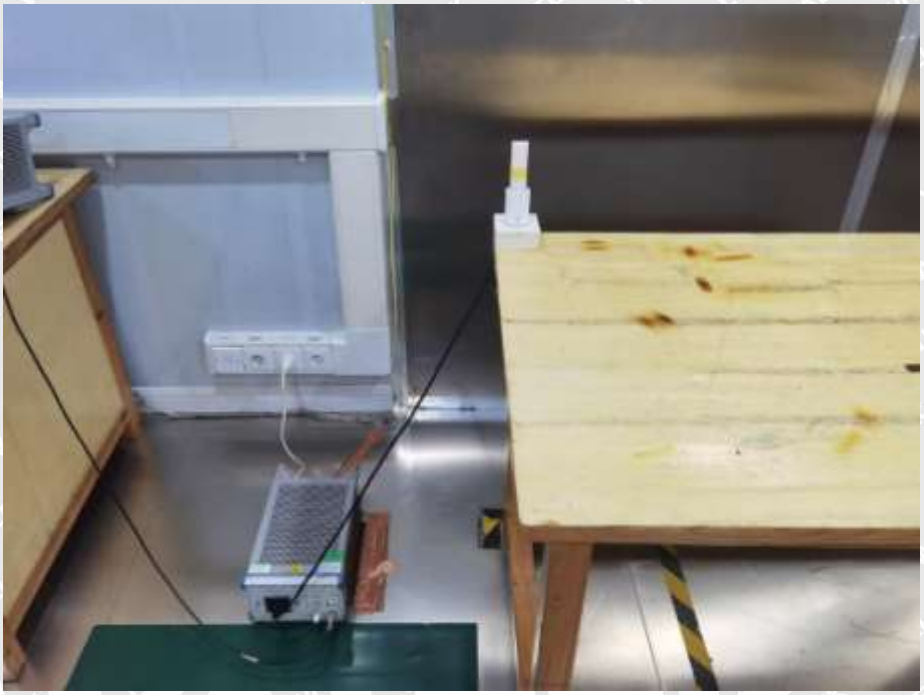


7.7.3 Test Results

Test Level in%U_T	Performance criterion	50Hz		60Hz	
		Duration	Result	Duration	Result
0	B	0.5	Pass	0.5	Pass
70	C	25	Pass	30	Pass
0	C	250	Pass	300	Pass

8 Photographs–Test Setup

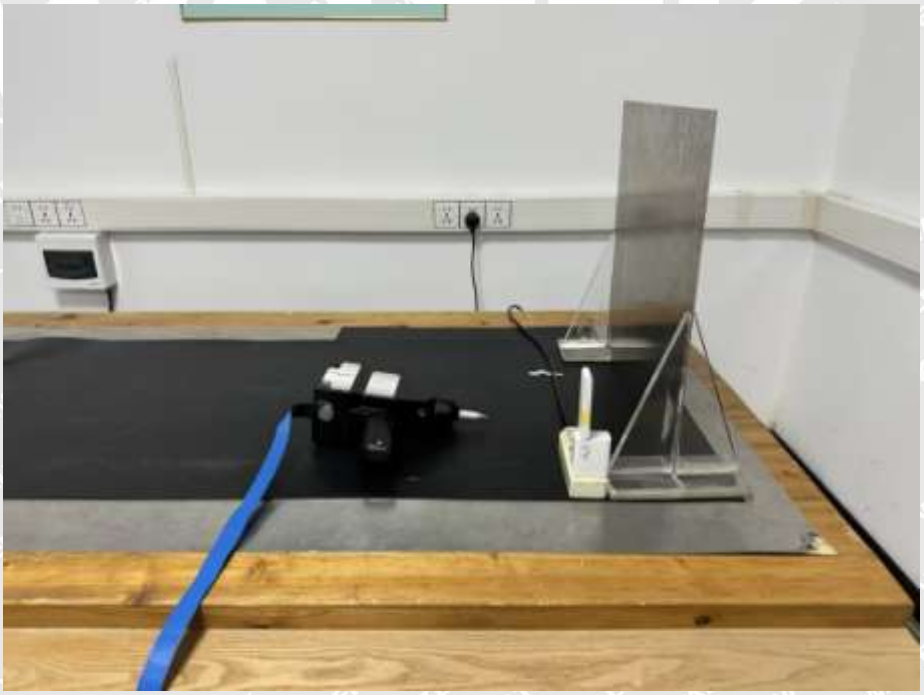
8.1 Photograph–Conducted Emissions from the AC mains power portsTest Setup



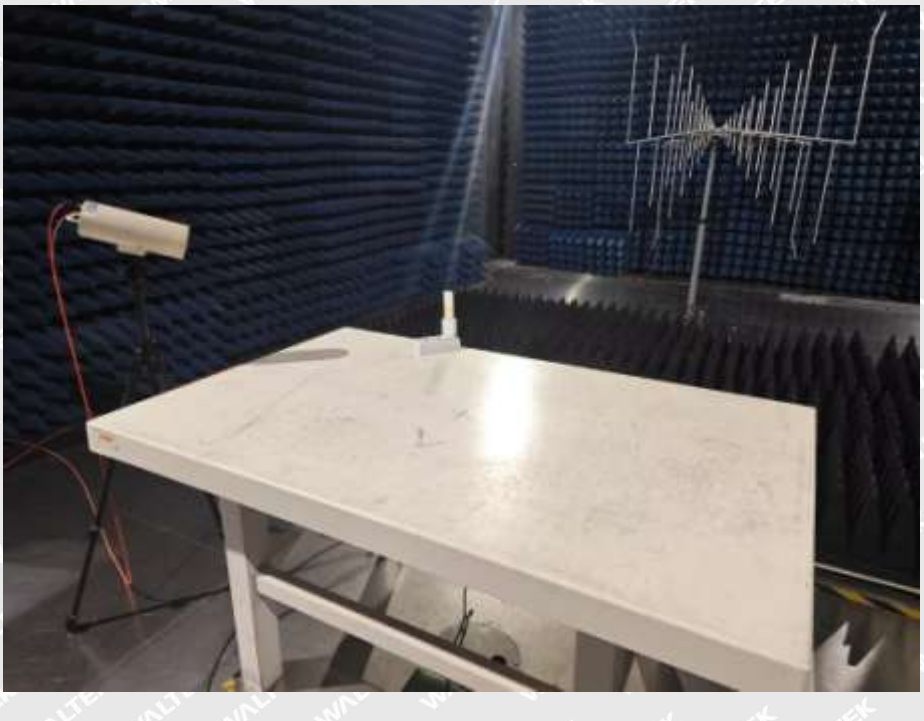
8.2 Photograph–Radiation Emission Test Setup 30MHz-1000MHz

8.3 Photograph –Radiation Emission Test Setup for Above 1GHz

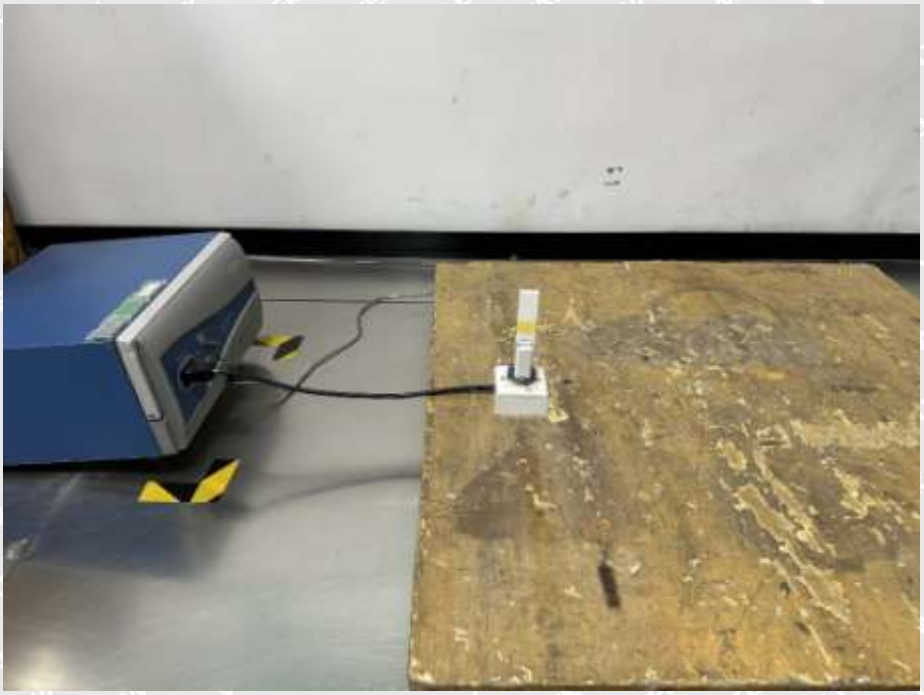
8.4 Photograph – ESD Immunity Test Setup



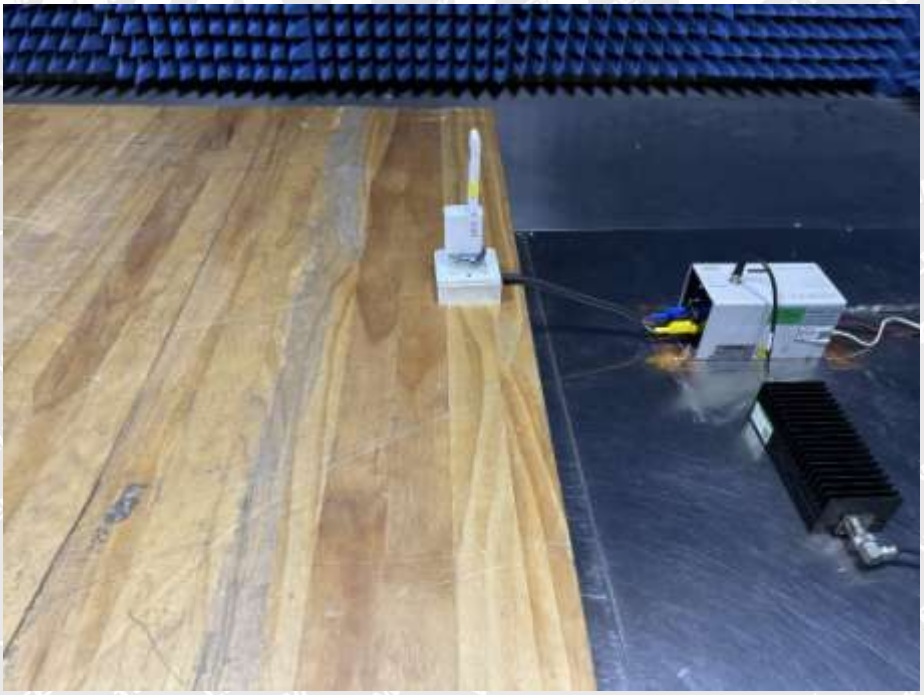
8.5 Photograph –Radio-frequency electromagnetic fields Test Setup



8.6 Photograph – EFT&Surges&Dips Immunity AC Mains Test Setup



8.7 Photograph – Injected Currents Immunity AC Mains Test Setup



9 Photographs–Constructional Details

Note: Please refer to appendix: Appendix-HM-G02E-Photos.

======End of Report======